Amendments to the Claims

The following Listing of Claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (canceled)

Claim 2 (currently amended): A system for reconstructing a high resolution image from at least one image sequence of temporally related high and low resolution image frames, each of said high resolution image frames including a low spatial frequency component and a high spatial frequency component, said system comprising:

a first spatial interpolator adapted to generate a low spatial frequency component from a low resolution image frame of said at least one image sequence;

a high spatial frequency component generator for generating a high spatial frequency component from at least one high resolution image frame of said at least one image sequence, said at least one high resolution image frame being closely related to said low resolution image frame;

a remapper for mapping said high spatial frequency component to a motion-compensated high spatial frequency component estimate of said low resolution image frame;

an adder for adding said motion-compensated high spatial frequency component estimate of said low resolution image frame to said generated low spatial frequency component of said low resolution image frame to form a reconstructed high resolution image of said low resolution image frame; and

~~The high-resolution image reconstruction system of claim 1, further comprising~~ a controller that controls relative contributions of said motion-compensated high spatial frequency component estimate of said low resolution image frame and said generated low spatial frequency component of said low resolution image frame in the reconstructed high resolution image of said low resolution image frame based on measures of confidence in motion estimates used to map said high spatial frequency component to the motion-compensated high spatial frequency component estimate of said low resolution image frame.

Claim 3 (currently amended): The high resolution image reconstruction system of claim ~~1~~2, wherein said first spatial interpolator upsamples the low resolution image frame in accordance with a bicubic upsampling algorithm.

Claim 4 (currently amended): The high resolution image reconstruction system of claim ~~1~~2, wherein said first spatial interpolator upsamples the low resolution image frame in accordance with a bilinear upsampling algorithm.

Claim 5 (currently amended): The high resolution image reconstruction system of claim ~~1~~2, wherein said first spatial interpolator upsamples the low resolution image frame in accordance with a least squares error minimization algorithm.

Claim 6 (currently amended): The high resolution image reconstruction system of claim ~~1~~2, wherein said high spatial frequency component generator includes a downsampler for downsampling at least one high resolution image frame of said at least one image sequence.

Claim 7 (currently amended): A system for reconstructing a high resolution image from at least one image sequence of temporally related high and low resolution image frames, each of said high resolution image frames including a low spatial frequency component and a high spatial frequency component, said system comprising:

a first spatial interpolator adapted to generate a low spatial frequency component from a low resolution image frame of said at least one image sequence;

a high spatial frequency component generator for generating a high spatial frequency component from at least one high resolution image frame of said at least one image sequence, said at least one high resolution image frame being closely related to said low resolution image frame, wherein said high spatial frequency component generator~~The high resolution image reconstruction system of claim 6~~, wherein said high spatial frequency component generator ~~further~~ includes a downsampler for downsampling at least one high resolution image frame of said at least one image sequence and a subpixel motion processor for generating a motion vector field and a confidence scalar field from said downsampled high

resolution image frame and said low resolution image frame of said at least one image sequence;

a remapper for mapping said high spatial frequency component to a motion-compensated high spatial frequency component estimate of said low resolution image frame; and

an adder for adding said motion-compensated high spatial frequency component estimate of said low resolution image frame to said generated low spatial frequency component of said low resolution image frame to form a reconstructed high resolution image of said low resolution image frame.

Claim 8 (original): The high resolution image reconstruction system of claim 7, wherein said high spatial frequency component generator further includes a second spatial interpolator adapted to generate a low spatial frequency component from said downsampled high resolution image frame.

Claim 9 (original): The high resolution image reconstruction system of claim 8, wherein said high spatial frequency component generator further includes a subtractor for subtracting said generated low spatial frequency component from said at least one high resolution image frame of said at least one image sequence to obtain a high spatial frequency component of said at least one high resolution image frame of said at least one image sequence.

Claim 10 (canceled)

Claim 11 (currently amended): A method of reconstructing a high-resolution image from at least one image sequence of temporally related high and low resolution image frames, each of said high-resolution image frames including a low spatial frequency component and a high spatial frequency component comprising:

spatially interpolating to generate a low spatial frequency component from a low-resolution image frame of said at least one image sequence;

generating a high spatial frequency component from at least one high resolution image frame of said at least one image sequence, said at least one high resolution image frame being closely related to said low resolution image frame;

remapping said high spatial frequency component to a motion-compensated high spatial frequency component estimate of said low resolution image frame;

adding said motion-compensated high spatial frequency component estimate of said low resolution image frame to said generated low spatial frequency component of said low resolution image frame to form a reconstructed high resolution image of said low resolution image frame; and

~~The method of claim 10, further comprising~~ controlling relative contributions of said motion-compensated high spatial frequency component estimate of said low resolution image frame and said generated low spatial frequency component of said low resolution image frame in the reconstructed high resolution image of said low resolution image frame based on measures of confidence in motion estimates used to map said high spatial frequency component to the motion-compensated high spatial frequency component estimate of said low resolution image frame.

Claim 12 (currently amended): The method of claim ~~10~~11, wherein said spatially interpolating is performed by bicubic upsampling.

Claim 13 (currently amended): The method of claim ~~10~~11, wherein said spatially interpolating is performed by bilinear upsampling algorithm.

Claim 14 (currently amended): The method of claim ~~10~~11, wherein said spatially interpolating is performed by utilizes a least squares error minimization algorithm.

Claim 15 (currently amended): The method of claim ~~10~~11, wherein said high spatial frequency component generating further comprises downsampling at least one high resolution image frame of said at least one image sequence.

Claim 16 (currently amended): A method of reconstructing a high-resolution image from at least one image sequence of temporally related high and low resolution image frames,

each of said high-resolution image frames including a low spatial frequency component and a high spatial frequency component comprising:

spatially interpolating to generate a low spatial frequency component from a low-resolution image frame of said at least one image sequence;

generating a high spatial frequency component from at least one high resolution image frame of said at least one image sequence, said at least one high resolution image frame being closely related to said low resolution image frame~~The method of claim 15~~, wherein said high spatial frequency component generating further comprises downsampling at least one high resolution image frame of said at least one image sequence and subpixel motion processing for the purpose of generating a motion vector field and a confidence scalar field from said downsampled high resolution image frame and said low resolution image frame of said at least one image sequence;

remapping said high spatial frequency component to a motion-compensated high spatial frequency component estimate of said low resolution image frame; and

adding said motion-compensated high spatial frequency component estimate of said low resolution image frame to said generated low spatial frequency component of said low resolution image frame to form a reconstructed high resolution image of said low resolution image frame.

Claim 17 (original): The method of claim 16, wherein said high spatial frequency component generating further comprises spatially interpolating to generate a low spatial frequency component from said downsampled high-resolution image frame.

Claim 18 (original): The method of claim 17, wherein said high spatial frequency component generating further comprises subtracting said generated low spatial frequency component from said at least one high resolution image frame of said at least one image sequence to obtain a high spatial frequency component of said at least one high resolution image frame of said at least one image sequence.

Claim 19 (canceled)

Claim 20 (currently amended): A system for reconstructing a high resolution image from a mixed spatial resolution image sequence comprising temporally spaced-apart image frames having different respective spatial resolutions, the system comprising:

a first frequency component generator that generates a first spatial frequency component from a first image frame selected from the image sequence, the first image frame having a first spatial resolution;

a second frequency component generator that generates a second spatial frequency component from a second image frame selected from the image sequence, the second image frame having a second spatial resolution higher than the first spatial resolution;

a remapper that spatially aligns the first and second spatial frequency components based on estimates of motion between the first and second image frames; and

a combiner that produces a high resolution image of the first image frame from a combination of the spatially aligned first and second spatial frequency components~~The system of claim 19~~, wherein the combiner produces the high resolution image of the first image frame from the spatially aligned first and second spatial frequency components with relative contributions controlled by measures of confidence in motion estimates used to spatially align the first and second spatial frequency components.

Claim 21 (previously presented): The system of claim 20, wherein the combiner produces the high resolution image of the first image frame with relative contributions from the second frequency component that increase with increasing measures of confidence in the associated motion estimates.

Claim 22 (currently amended): A method of reconstructing a high resolution image from a mixed spatial resolution image sequence comprising temporally spaced-apart image frames having different respective spatial resolutions, the method comprising:

generating a first spatial frequency component from a first image frame selected from the image sequence, the first image frame having a first spatial resolution;

generating a second spatial frequency component from a second image frame selected from the image sequence, the second image frame having a second spatial resolution higher than the first spatial resolution;

spatially aligning the first and second spatial frequency components based on estimates of motion between the first and second image frames; and

producing a high resolution image of the first image frame from a combination of the spatially aligned first and second spatial frequency components, wherein the producing comprises combining the spatially aligned first and second spatial frequency components based on measures of confidence in the estimates of motion.